BANK OF ENGLAND

Introduction to the NGFS climate scenarios

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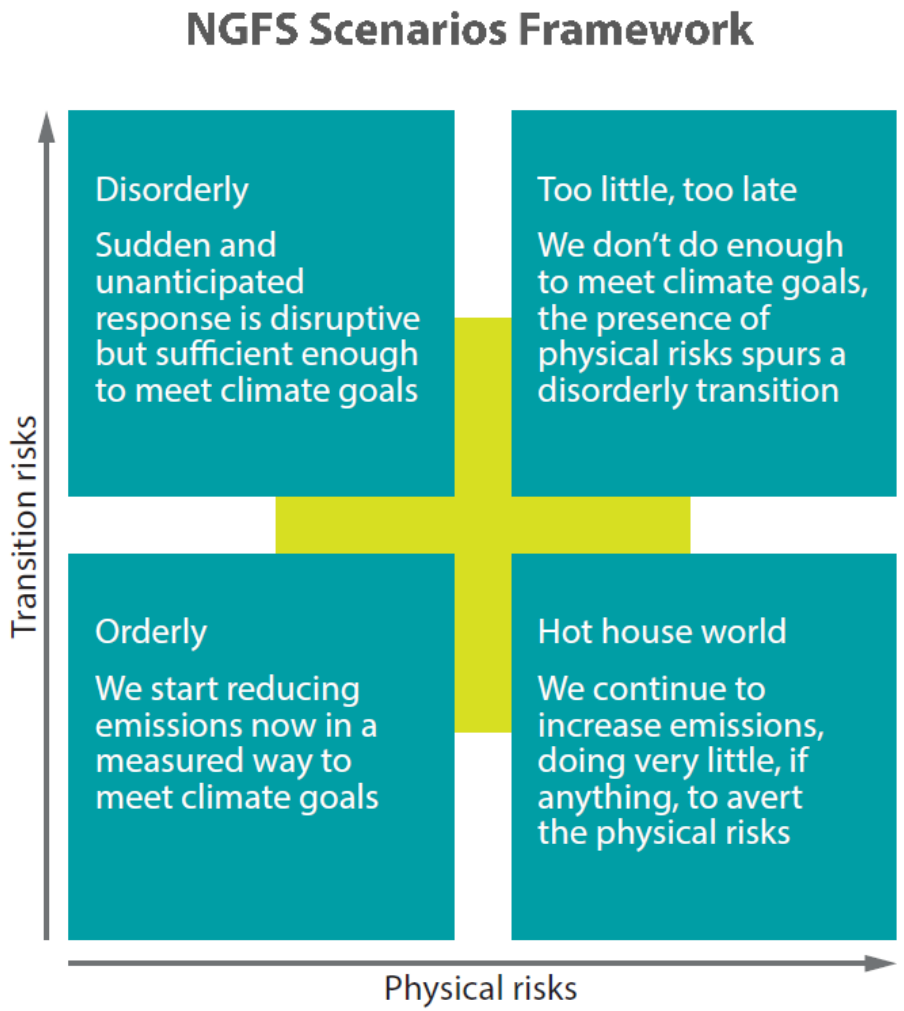
Climate scenario analysis is crucial

- There is a high degree of certainty that some combination of **physical and transition risks will materialise** in the future
- However, the exact outcomes, time horizon and future pathway are **uncertain**, and **dependent on short-term actions**
- **Scenario analysis offers a flexible 'what-if' methodological framework** to explore the risks that could crystallise in different possible future states



NGFS
Central Banks and Supervisors Network for Greening the Financial System

Climate scenario analysis is challenging

Climate scenarios are:

- **Complex** – they project a consistent set of pathways of climate policy, greenhouse gas emissions and mean global temperature trajectories
- **Interdisciplinary** – relying on climate science as well as economics, with central banks acting as translators to the financial community
- **Difficult to compare** – Many future scenarios are possible but ideally a common set of scenarios is used across institutions and firms to enhance comparability of results and disclosures

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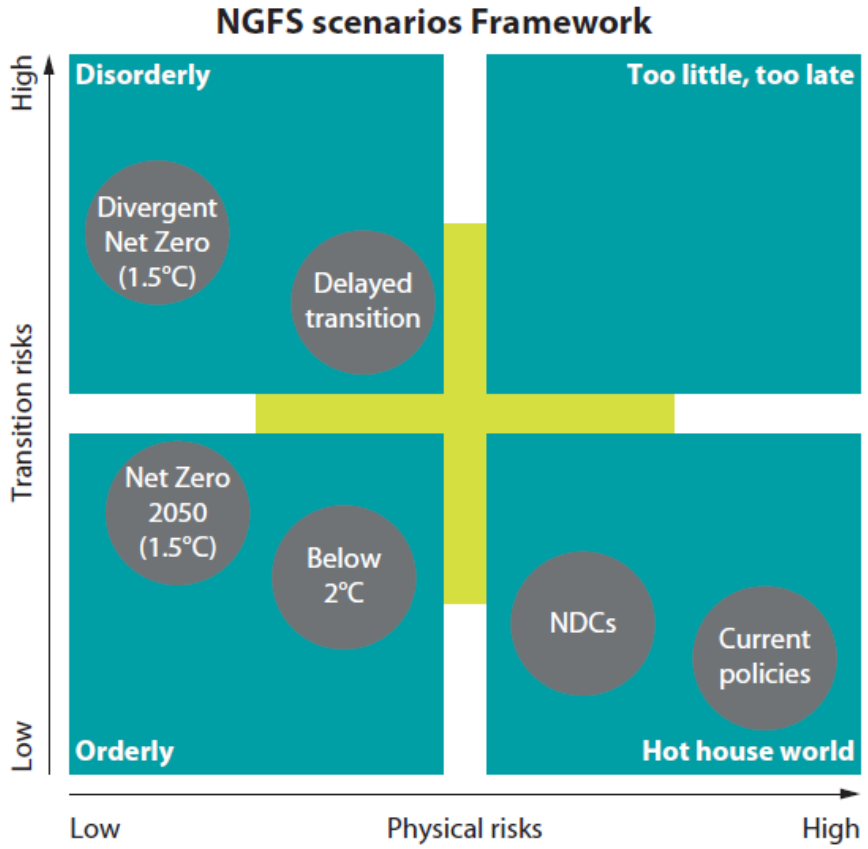
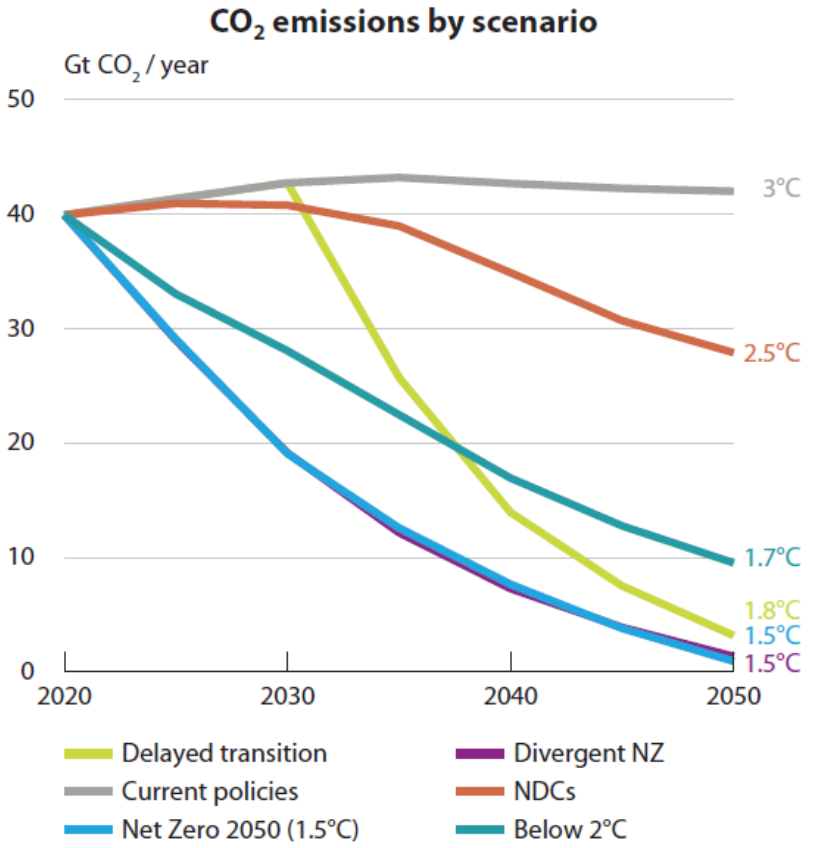
NGFS scenarios provide a common starting point



Positioning of scenarios is approximate, based on an assessment of physical and transition risks out to 2100.



Source: IIASA NGFS Climate Scenarios Database, REMIND model. End of century warming outcomes shown.

Accessible at https://www.ngfs.net/ngfs-scenarios-portal/

Risk drivers in the NGFS scenarios

Scenarios vary in their level of physical and transition risk based on underlying assumptions

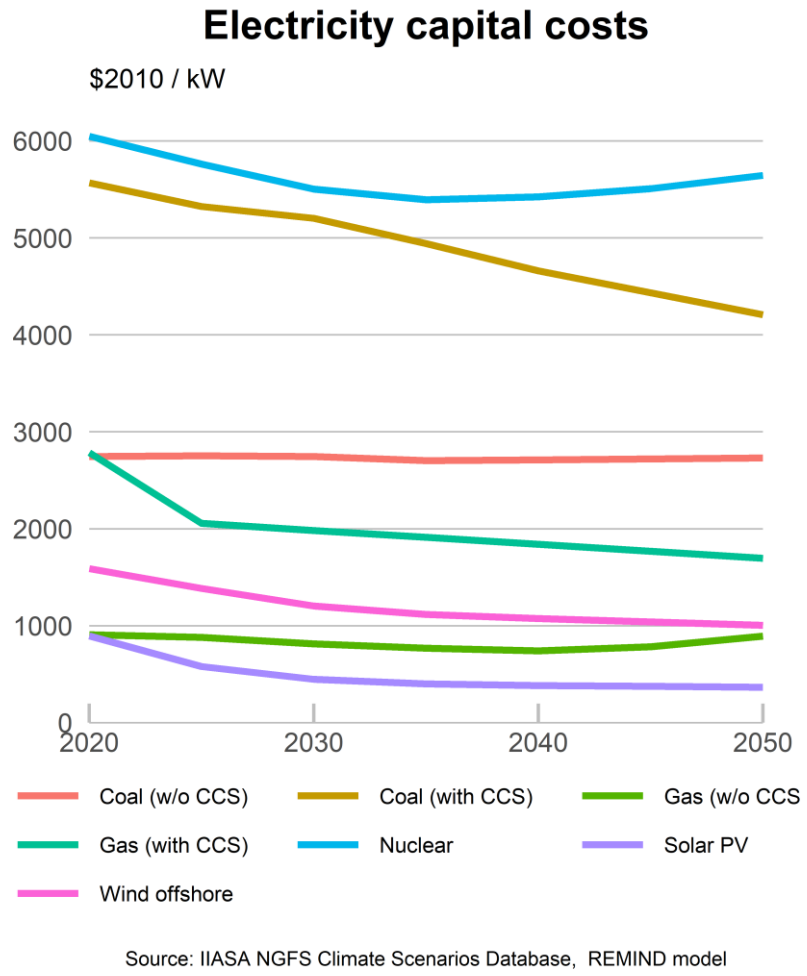
		Physical risk	Transition risk			
Category	**Scenario**	**Policy ambition**	**Policy reaction**	**Technology change**	**Carbon dioxide removal**	**Regional policy variation⁺**
Orderly	Net Zero 2050	1.5°C	Immediate and smooth	Fast change	Medium use	Medium variation
	Below 2°C	1.7°C	Immediate and smooth	Moderate change	Medium use	Low variation
Disorderly	Divergent Net Zero	1.5°C	Immediate but divergent	Fast change	Low use	Medium variation
	Delayed transition	1.8°C	Delayed	Slow/Fast change	Low use	High variation
Hot House World	Nationally Determined Contributions (NDCs)	~2.5°C	NDCs	Slow change	Low use	Low variation
	Current Policies	3°C+	None – current policies	Slow change	Low use	Low variation

Colour coding indicates whether the characteristic makes the scenario more or less severe from a macro-financial risk perspective^

- Lower risk
- Moderate risk
- Higher risk

Key input assumptions

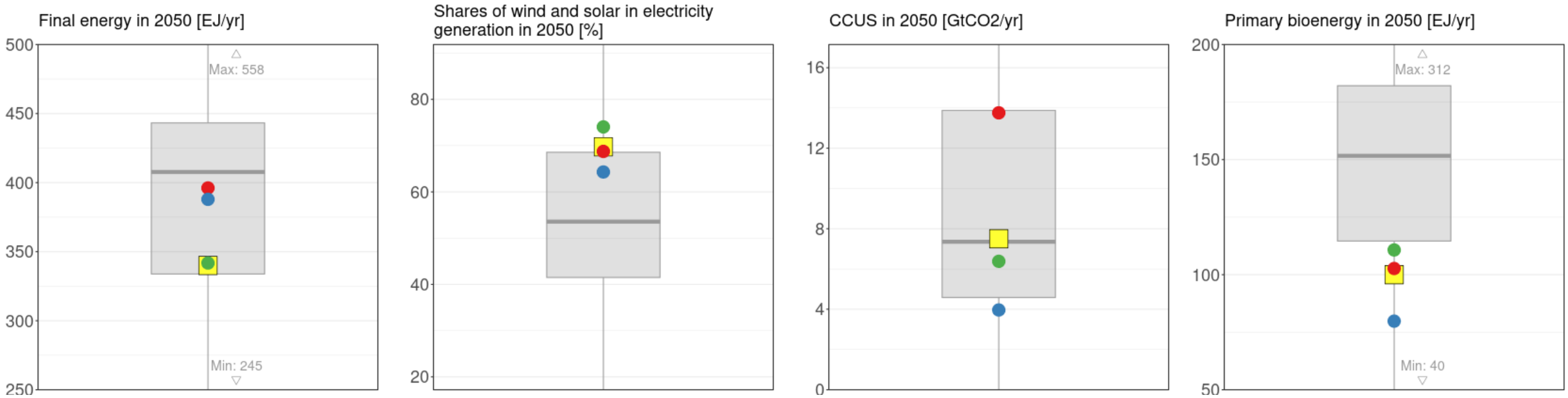
- The NGFS scenarios assume as a baseline that **population and productivity growth** continue in line with current trends, while **technological advancement** depends on learning dynamics.
- For illustration, the chart shows how average **global capital costs** for installing new electricity capacity are assumed to evolve across different types of energy source in the REMIND model. These costs vary by region.
- Societal assumptions have been standardised by the academic community as the **Shared Socioeconomic Pathways** (SSPs). The NGFS scenarios are based on SSP2 (past trends), but there are other possibilities – if consumer preferences were to shift (e.g. SSP1 narrative) this could reduce potential transition impacts.



Source: IIASA NGFS Climate Scenarios Database, REMIND model

NGFS and IEA Net Zero scenarios are well aligned

The recently released IEA NZE2050 scenario is well aligned with the NGFS Net Zero scenarios on a number of dimensions. Compared to earlier 1.5°C pathways they tend to have lower bioenergy use and energy demand, and higher solar and wind energy share.



IEA NZE2050 (2021)

IPCC SR1.5 (2018)

NGFS – Net Zero 2050 scenarios

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Thank you!